COMPARISON OF FILTER MATERIALS USED FOR DEPTH FILTRATION

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Abstract

Examination of the depth filtering operation is very important from an energetic and quality point of view. The filtration is one of the most determining operation in many technologies. According to the operating mechanism we distinguish: surface and depth filtration. It is desirable to analyze the filter materials used for the depth filter, the time required for filtering, the purity of the filtrate, or the possibility of backwash (filter layer cleaning), filtration pressure, etc.

In case of depth filtration, the filter material is formed by a natural or artificially formed layer and the solids to be removed remain into the inside of the filter layer: As an example, some of the drinking water receive from bank filtered water resources. It means the water is cleaned of gravel and sand layer.

The purpose of our investigation is analyzing, and comparative examination of different filter materials used in depth filters and to appropriate filter material is used in the technologies. We examined green glass, diatomaceous earth, quartz sand in different fractions and specially designed plastic filter material. The pilot equipment for the tests has been designed for gravitational and forced flow also, in each case same filter layer height was used. During filtering was measured and examined: time of filtration, flow rate; purity of the filtrate. Our results were showed by methods of Carmen and d'Arcy, and comparison with porosity of the filter material.

The pilot-measurement equipment is suitable for testing filter media applied to filtering technology, assessing the quality of the operation and estimating the technical parameters (flow rate, filtration pressure, etc).

Key words: depth filtering, filter media, filtrate

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